

Cortinarius osloensis; a calcareous *Tilia* forest species

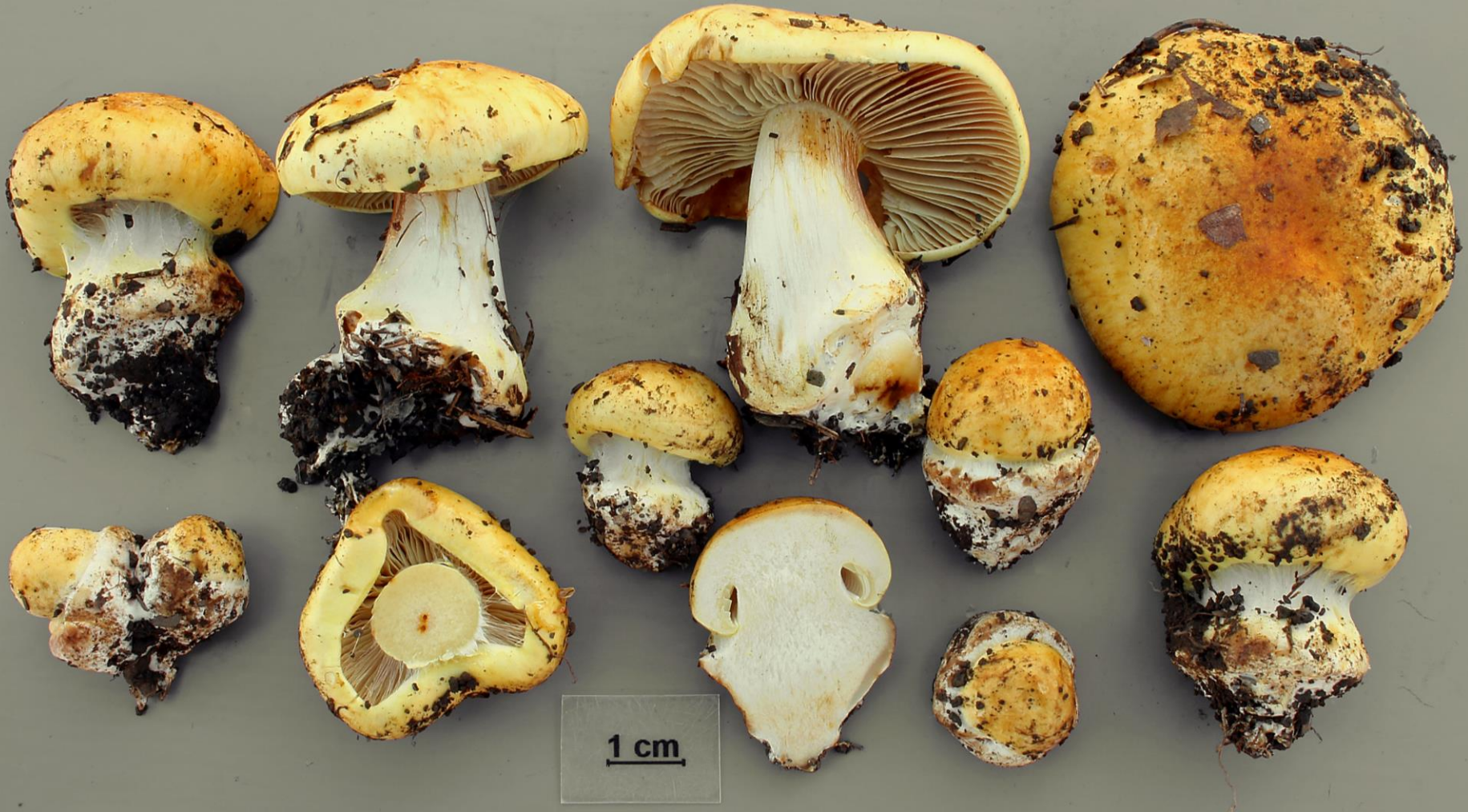
Tor Erik Brandrud, NINA (NEFOM flash talks 2021)



Cortinarius osloensis

belonging to the section/subgenus *Calochroi* (w/ many habitat-specific, strictly calcareous species)

(foto: B. Dima, NINA)



Cortinarius osloensis characteristics:

- Strongly marginate, flattened bulb, a thick, glutinous pileus cuticle and amygdaloid-citriform strongly verrucose spores (typical Calochroi features).
- w/ **yellow anthraquinonoid pigments**, rendering lamellae and pileus yellow (in *C. osloensis* the pigment flavomannin-trimethylether)
- Strictly associated with calcareous *Tilia* forests
- Belonging to clade \Humolentes with e.g. *C. humolens* (mainly calcareous *Fagus*- and *Quercus ilex* forests) and *C. mariekristinae* (also calcareous *Tilia* forests).

Cortinarius osloensis

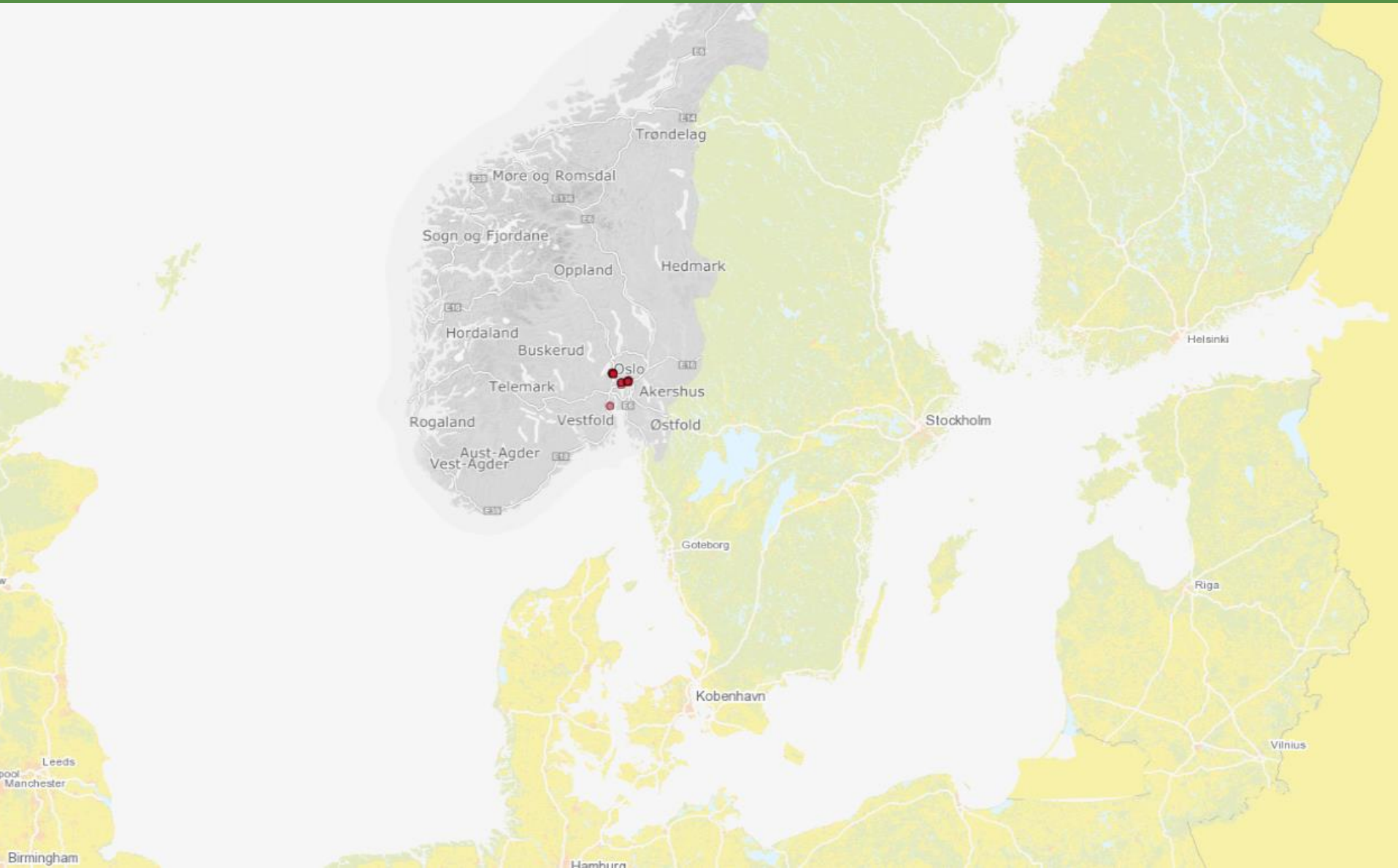
strictly associated with calcareous Tilia forests

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Cortinarius osloensis

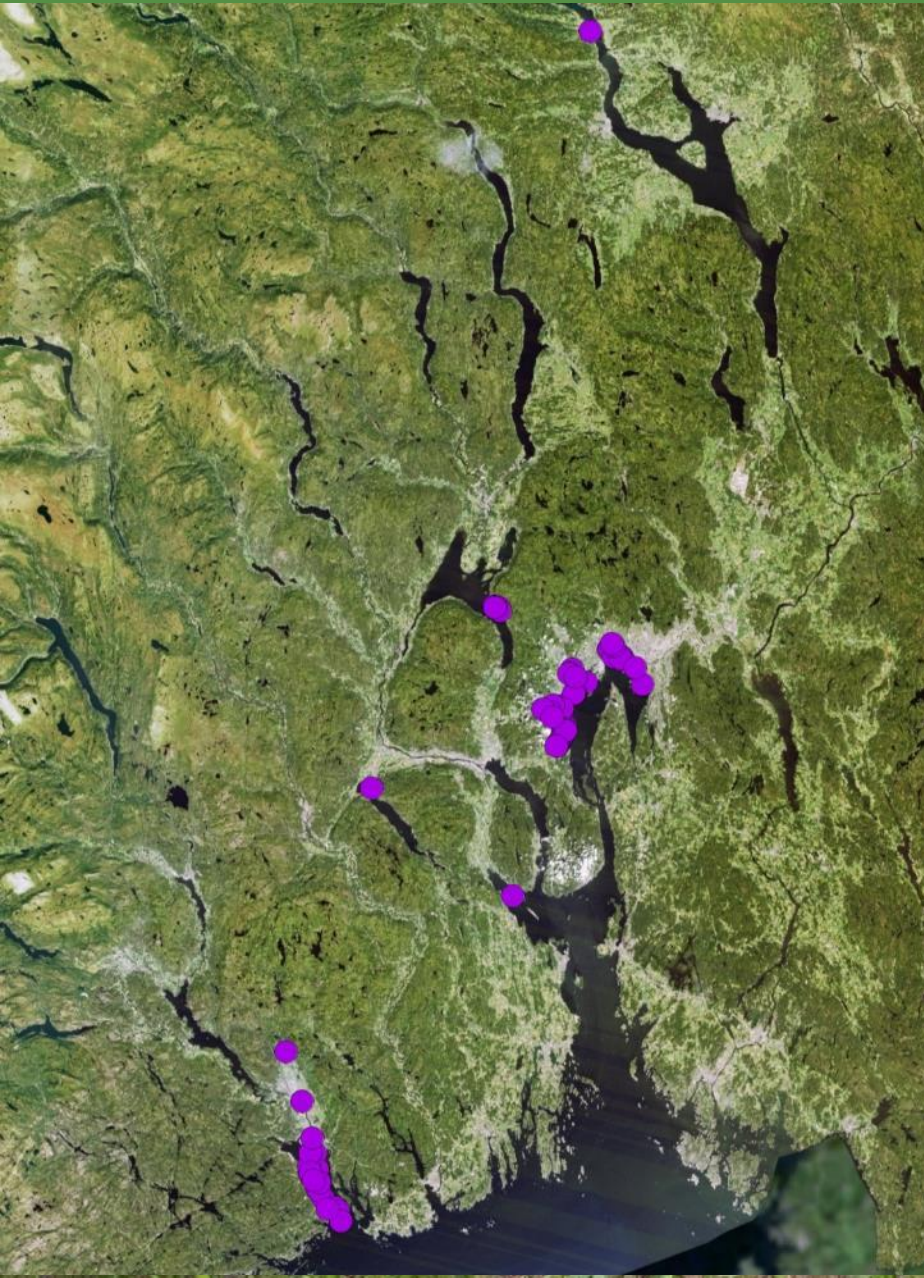
known almost exclusively from the Oslofjordregion (11 sites + 1 site Hungary & Italy, resp.)
also included on the IUCN Global redlist (foto: B. Dima, NINA)



Calcareous *Tilia cordata* forests in SE Norway: = hotspot for many calciphilous mycorrhizal fungi, esp. of *Cortinarius*:



Limited distribution: Oslofjorden (-Mjøsa)



The calcareous *Tilia* forests:

- Almost restricted to SE Norway (ca 200 sites; few sites also in Czech rep, Hungary, Italy)
- >6000-7000 year old relic (remnant) sites
- incl **ca. 90** habitat-specific calcareous *Tilia* forest species in Norway
- Many are found in calc. *Fagus-Quercus-Corylus* forests elsewhere in Europe, but some (like *C. osloensis*) are restricted to the *Tilia* forests



Many *Tilia* individuals possess very extensive basal parts, estimated to be >1000 years old



each *Tilia* individual may have up to 60 stems



ongoing studies on the Oslofjord calcareous Tilia forest:

- **Monitoring program** started 2013 (30 sites). Monitoring **fruitbodies/basidiomes** of the habitat-specific calc. Tilia forest species. *C. osloensis* recorded on six sites.
- In 2019 a pilot monitoring study w/ ITS-DNA metabarcoding was included (in prep). More than half of the monitoring species were verified by soil sample sequence blasts, from one season, including 3 «hits» (sites) with *C. osloensis*.
- Fruit-body surveying and soil sample metabarcoding appears to be well-suited as **supplementary monitoring methods** for these very rare, threatened species with small, very localized populations.